

## **AMENDMENTS TO THE CLAIMS**

The following listing of claims will replace all prior versions and listings of claims in the application.

### **LISTING OF CLAIMS**

1. – 84. cancelled.

85. (currently amended) An apparatus for determining cardiac output to within a constant scale factor comprising a computer system that includes:

- (a) computer readable media having code comprising computer-executable process steps; and
- (b) a processor that executes the process steps to:
  - (i) accept an input representing a measurement of an arterial blood pressure signal over a plurality of cardiac cycles;
  - (ii) estimate a function that represents the response of the arterial blood pressure to a single cardiac contraction;
  - (iii) fit the function of step (ii) to an exponential-like function over a time period that begins a selected amount of time following the maximum value of the function;
  - (iv) estimate the time constant of the function of step (ii) as the time constant of the exponential function of step (iii); and
  - (v) determine cardiac output to within a constant scale factor by dividing average arterial blood pressure ABP by the time constant obtained in step (iv).

86. (original) The apparatus of claim 85, further comprising an analog-to-digital converter.

87. (original) The apparatus of claim 85, wherein the apparatus includes a buffer system.

88. (original) The apparatus of claim 85, wherein the apparatus includes a display device.

89. – 96. cancelled.

97. (currently amended) An apparatus for determining cardiac output to within a scale factor comprising a computer system that includes:

- (g) computer readable media having code comprising computer-executable process steps; and
- (h) a processor that executes the process steps to:
  - i. accept an input representing a measurement of an arterial blood pressure APB signal over a plurality of cardiac cycles;
  - ii. capture long time scale information by estimating an impulse response which when convolved with cardiac contractions fits the arterial blood pressure APB signal;

- iii. obtain a time constant by fitting an exponential-like function to the estimated impulse response over a time period that begins a selected amount of time following its maximum value;
- iv. determine cardiac output to within a scale factor by dividing a measure of the average arterial blood pressure **APB** by the time constant.

98. (previously presented) The apparatus of claim 97 further comprising an analog-to-digital converter.

99. (previously presented) The apparatus of claim 97 wherein the apparatus includes a buffer system.

100. (previously presented) The apparatus of claim 97 wherein the apparatus includes a display device.

101. (new) The apparatus of claim 85 wherein arterial blood pressure is measured invasively or non-invasively at any site in the systemic or pulmonary arterial tree.

102. (new) The apparatus of claim 85 wherein arterial blood pressure is further defined as systemic arterial pressure.

103. (new) The apparatus of claim 85 wherein arterial blood pressure is further defined as pulmonary blood pressure.

104. (new) The apparatus of claim 97 wherein arterial blood pressure is measured invasively or non-invasively at any site in the systemic or pulmonary arterial tree.

105. (new) The apparatus of claim 97 wherein arterial blood pressure is further defined as systemic arterial pressure.

106. (new) The apparatus of claim 97 wherein arterial blood pressure is further defined as pulmonary blood pressure.